2020 ADVANCED DUI TRIAL ADVOCACY

August 31 – September 3, 2020
Phoenix, Arizona

Tuesday, September 1, 2020

Useful DUI Studies

Presented by:

William Burke
Tempe City Prosecutor

Distributed by:

ARIZONA PROSECUTING ATTORNEYS' ADVISORY COUNCIL
3838 N. Central Ave, Suite 850
Phoenix, Arizona 85012

ELIZABETH BURTON ORTIZ
EXECUTIVE DIRECTOR

1015 Kenway Court
Columbus, Ohio 43220
August 31, 2007

James Nesci, Esq.
Attorney at Law
Nesci, St. Louis & West PLLC
216 North Main Avenue
Tucson, AZ 85701

Re: Intoxilyzer 8000

Dear Mr. Nesci:

This is my opinion letter report regarding the problems associated with and the lack of acceptance in the forensic toxicology community of the Intoxilyzer 8000 as an evidential breath-alcohol testing machine.

My education, background, and training include the following:

I received a Doctor of Pharmacy degree in 1971 from the University of California Medical Center and a Ph.D. degree in Pharmaceutical Chemistry in 1974, also from the University of California. The Doctor of Pharmacy degree provided a background in organic chemistry, physics, calculus, anatomy, physiology, pathology, pharmacology, toxicology, pharmacokinetics, and clinical pharmacy. The Ph.D. degree provided graduate training in advance organic chemistry, drug assay methodologies, pharmacokinetics, pharmacology, and toxicology. As a faculty member at The Ohio State University for 30 years (1974-2004), my teaching and research involved measuring drugs in biological fluids and determining and predicting the time course of drug (including alcohol) absorption, distribution, and elimination in the body. I am currently an emeritus faculty member of The Ohio State University College of Pharmacy. Since 1985 I have provided consulting and expert testimony in both civil and criminal cases in the area of forensic toxicology of alcohol and other drugs. In the area of breath-alcohol testing, my specialized training includes an Intoxilyzer 5000 Operator's Course (1997–Marietta, Georgia), a BAC DataMaster Training Course (1997–Mansfield, Ohio), and an Intoxilyzer 8000 Department of Transportation (DOT) training course for Breath Alcohol Technicians (2005–Jackson Mississippi). I also have taken the two-day training course for Ohio Senior Operators. My forensic toxicology presentations at seminars include presentations at the 8th Annual Mastering Scientific Evidence in DUI/DWI Cases in Atlanta, Georgia; the National College for DUI Defense, 2004 Summer Session, in Cambridge, Massachusetts; the 2005 and 2006 Mastering Scientific Evidence Seminars in Dallas, Texas; and the 2006 Ohio Prosecuting Attorneys Association Spring Training Seminar in Columbus, Ohio. I am also the course director and instructor at three-day operator-training courses for the Intoxilyzer 8000, the most recent one being held in New Orleans, February 22-24, 2007.

* Nesci was presenter *

In my laboratory, I have a number of breath-alcohol testing machines, including the Intoxilyzer 5000 (series 64, 66, 68, and 68EN), the Intoxilyzer 8000, the BAC DataMaster, and the DataMaster cdm. I am a member of many professional and scientific organizations, including the American Academy of Forensic Sciences, of which I am a member of the Toxicology Section, and the Society for the Scientific Detection of Crime, of which I am a past president. Please see my curriculum vitae for additional details.

Based upon my education, background, and training, the following statements can be made to a reasonable degree of scientific certainty regarding the problems with the Intoxilyzer 8000:

1. In contrast to the Intoxilyzer 5000 machine [which, depending upon the model series, measures infrared light at either three wavelengths, 3.39 microns (acetone), 3.48 microns (ethanol), and 3.80 microns (reference), or five wavelengths, 3.36 microns (acetaldehyde), 3.40 microns (acetone), 3.47 microns (ethanol), 3.52 microns (toluene), and 3.80 microns (reference)], the Intoxilyzer 8000 measures infrared light at only two wavelengths, 3.4 microns and 9.36 microns. The measurement of infrared light at wavelengths around 3.4 microns allows detection of infrared light that is characteristic of the absorption of infrared light by the carbon-hydrogen (C-H) bond (corresponding to C-H bond-stretching vibrational energy). Since all hydrocarbon molecules have carbon-hydrogen bonds, essentially any hydrocarbon molecular will absorb infrared light in the region around 3.4 microns. However, the degree of absorption in this region will vary somewhat from hydrocarbon to hydrocarbon depending upon structural differences among different hydrocarbons. By comparing the ratios of absorption of infrared light at different wavelengths, software programs can be written to potentially distinguish between the absorption ratios of the alcohol (ethanol) molecule and the ratios of other hydrocarbons, such as toluene. After it was experimentally determined that the Intoxilyzer 5000 machines that measure infrared absorbances at only three wavelengths were unable to distinguish toluene from ethanol, the manufacturer redesigned the machine so it would be able to measure two additional wavelengths of infrared light. Comparing the absorbance ratios of additional wavelengths of light reduced the probability of the machine falsely detecting a volatile organic compound as ethanol. By monitoring only wavelengths of infrared light in the region of 3.4 microns, the Intoxilyzer 5000 was unable to monitor the actual alcohol portion of ethanol, the carbon-oxygen-hydrogen (-COH) portion of ethanol.

The Intoxilyzer 8000, however, monitors the 9.36 micron wavelength of infrared light that is characteristic of the absorption of infrared light by the carbon-oxygen (C-O) bond (corresponding to the C-O bond-stretching vibrational energy). By measuring both at 3.4 microns (for the C-H bond) and at 9.36 microns (for the C-O bond), the potential for hydrocarbon molecules (such as toluene which has no oxygen atom in its structure) being falsely identified as ethanol is essentially eliminated. However, oxygen-containing hydrocarbon molecules, such as ethers, absorb infrared light in regions around both 3.4 microns and 9.36 microns and, therefore, have the potential to be falsely detected as ethanol by the Intoxilyzer 8000, depending upon the software criteria for acceptance of the absorbance ratio of the two wavelengths. Because the manufacturer refuses to release the software code, it is impossible to determine if the acceptance

criteria for the absorbance ratio of the two wavelengths is +/- 1%, +/- 10%, +/- 50%, or +/- X% of some expected absorbance ratio for the two wavelengths of the ethanol molecule. The larger the acceptance criteria, the greater the probability for falsely reporting oxygen-containing molecules as ethanol.

In addition, the probability of false detection of oxygen-containing molecules as ethanol is increased because the Intoxilyzer 8000 is measuring only two wavelengths of infrared light. The monitoring of the absorbance ratios of additional wavelengths of infrared light would improve the selectivity of the Intoxilyzer 8000 machine for ethanol, as was demonstrated for the Intoxilyzer 5000.

2. While the measurement of the absorbance of infrared light at 9.36 microns essentially eliminated the potential for falsely reporting non-oxygen containing hydrocarbons as ethanol, the reliability of the Intoxilyzer 8000 to accurately detect mouth alcohol contamination was reduced. In order to be able to detect infrared light at the 9.36 micron wavelength, the manufacturer had to change from the quartz-iodide infrared source in the Intoxilyzer 5000 to the use of a pulsed infrared source in the Intoxilyzer 8000. Mouth alcohol contamination is detected as the software program detects a negative slope in the breath-alcohol concentration while the subject blows into the machine. A subject with only mouth alcohol contamination (for example, rising mouth with an alcohol-containing substance) who blows into a breath-alcohol testing machine will have a decrease in the amount of alcohol molecules in the oral cavity as the blowing process continues because some of the alcohol molecules are exiting the oral cavity and being carried by the subject's breath into the machine. Consequently, as the subject blows into the machine, both the mouth alcohol contamination is being reduced and the resultant breath-alcohol concentration is dropping. The decreasing breath-alcohol concentration is seen by the machine as a negative slope which should cause the software program to issue an "Invalid Sample" response on the display and on the printout. However, the ability of the machine to detect a negative slope depends, in part, on the frequency of measurement at the two wavelengths and the calculation and processing of the resultant absorbance ratios as a function of time. The use of the pulsed infrared source rather than the quartz-iodide infrared source reduces the frequency of measurement thereby reducing the machine's ability to detect a negative slope even when only mouth alcohol contamination is present. All evidential breath-alcohol machines have difficulty detecting mouth alcohol contamination in conjunction with some lung air alcohol because the negative slope due to the alcohol concentration from the mouth alcohol contamination will be added to the positive slope as a result of the alcohol concentration coming from the lungs while the subject blows into the machine. The sum of the two curves from both sources of alcohol often appears as a falsely high plateau. The falsely high plateau is then reported by the machine as a "valid" breath-alcohol result, when, in fact, it is an invalid result that has been elevated by the contribution from the mouth alcohol contamination (caused by refluxing of alcohol-containing stomach contents via coughing, belching, burping, or medical conditions such as gastro-esophageal reflux disease). With or without lung air alcohol, the Intoxilyzer 8000 has more difficulty detecting mouth alcohol contamination than the Intoxilyzer 5000.

In order to demonstrate the difficulty the Intoxilyzer 8000 has in detecting mouth alcohol, I conducted a study in which a subject (6' 3", 270 lbs) consumed 10 oz. of 80 proof vodka over 90 minutes, waited 20 minutes, and then started breath-alcohol testing every few minutes for an additional two hours and forty-five minutes. Results are shown in Figure 1. Peak alcohol concentration was obtained at about 33 minutes after the end of the last drink. While on the downslope (during the post-absorption phase), the subject rinsed his mouth with alcohol-containing mouthwash in order to simulate refluxing of alcohol-containing stomach contents. The breath-alcohol concentration jumped from a level of about 0.08 g/210 L to a level of over 0.20 g/210 L without the Intoxilyzer 8000 reporting an "Invalid Sample" response. Later on, while the subject ate some pizza, the Intoxilyzer reported smaller elevations in breath-alcohol concentration due to mouth alcohol contamination from low levels of alcohol in the pizza crust. A subsequent use of mouthwash did result in an "Invalid Sample" (shown by the break in the data) followed by a second test showing, again, some elevation in the breath-alcohol concentration without a reported "Invalid Sample" response by the Intoxilyzer 8000. This study shows the lack of reliability of the Intoxilyzer 8000 in detecting mouth alcohol contamination.

The acceptance criteria for detection of mouth alcohol contamination (the number of determinations, length of time between measurements, the degree of negative change in the breath-alcohol concentration, etc.) used by the Intoxilyzer 8000 is unknown because the manufacturer (CMI) refuses to release the machine software code/program for examination and evaluation.

3. In 2003, the Tennessee Bureau of Investigation (TBI) Forensic Services Division evaluated the Intoximeter EC/IR II, the CMI Intoxilyzer 8000, and the Drager Alcotest 7110 breath-alcohol testing machines for accuracy, precision, and performance. Accuracy and precision were evaluated using a series of standard ethyl alcohol solutions and a series of standard ethyl alcohol solutions containing various interferants. Performance was evaluated by placing each instrument in a field environment and using DC current in a vehicle.

The Intoximeter EC/IR II and the Drager Alcotest 7110 yielded satisfactory results on the accuracy, precision, and performance tests. The CMI Intoxilyzer 8000 did not yield satisfactory results.

The controller software, a requirement of the TBI Forensic Services Division specification was a critical part of the evaluation. Only Intoximeter Inc. submitted its controller software system and was found to be satisfactory with respect to this requirement.

Based upon its evaluation, only the Intoximeter EC/IR II machine and software system was recommended for approval for use in the State of Tennessee's Breath Alcohol Program.

4. The Intoxilyzer 8000 is unable to measure a subject's breath temperature and unable, therefore, to take appropriate corrective procedures for the determination of breath-alcohol concentrations in subjects having elevated breath temperatures. The Intoxilyzer 8000 is

calibrated using simulation solutions having known alcohol concentrations at 34° C. The average human breath temperature is assumed to be 34° C. However, studies by the Alabama Department of Forensic Sciences and the Alabama Department of Public Safety found most of the breath samples (81% - 93%) measured on the Drager Alcotest 7110 MK IIIs to had breath temperatures above 34° C. Their studies found that the mean temperature was 34.9° C, a value consistent with previous studies reporting mean breath temperatures of 35.1° C and 35° C. Because the breath-alcohol concentration is temperature dependent for each one degree C in temperature above 34° C, there will be an elevation of approximately 7% in the reported breath-alcohol concentration. In contrast to the Intoxilyzer 8000, the Drager Alcotest 7110 MK III is able to measure a subject's breath temperature and take appropriate corrective procedures for the determination of breath-alcohol concentrations in subjects having elevated breath temperatures. The failure of the Intoxilyzer 8000 to measure breath temperature and take appropriate corrective procedures can produce unreliable test results particularly in subjects with alcohol levels near the *per se* limits.

5. The Intoxilyzer 8000 has experienced software problems that have resulted in invalid test results (breath samples having less than acceptable breath volumes, i.e. less than 1.1 liters) being reported as valid test results. The manufacturer (CMI) reported that the software problem of the machine omitting a "Volume Not Met" response occurred only with breath samples that ended beyond the three-minute time-out period. An additional or alternative explanation could be that the problem with the software was associated with breath samples exhibiting a decrease in the detectable breath-alcohol concentrations during the blowing process (an indication of mouth alcohol contamination). The detection of the negative slope would have caused an early termination of the test, but the faulty software may have omitted an "Invalid Sample" response and, in its place, reported a falsely high test result. In any event, this software problem was only detected because the breath-volume measurement is printed on the evidence ticket and the acceptance criteria for the minimum breath volume is reported to be 1.1 liters. It is likely that additional software problems exist but are undetectable because they are associated with acceptance criteria having values that are not printed on the evidence tickers.

6. Experiments using a subject who had achieved breath-alcohol concentrations in the approximate range of 0.080 g/210 L have demonstrated the large variability in breath-alcohol test results caused by the duration of blowing into the Intoxilyzer 8000. Valid breath-alcohol test results can be obtained whenever the Intoxilyzer 8000 has met its acceptance criteria following a minimum breath volume of 1.1 liters. Other breath-alcohol testing machines, such as the BAC DataMaster, have acceptance criteria that include requiring a minimum breath volume of 1.5 liters. The goal of breath-alcohol testing is to achieve uniform, reproducible, scientifically reliable test results. However, the Intoxilyzer 8000's acceptance criteria permits large variations in test results (beyond the recognized normal biological variability of +/- 0.020 g/210 L) due to the duration of blowing. The longer a subject blows into an Intoxilyzer 8000, the greater the breath volume, and the greater the likelihood that the resultant test result will be higher. Testing officers are aware of this relationship and, despite procedures or instructions to the contrary, frequently demand of the test subject to "keep blowing, keep blowing, keep blowing." well

beyond the conditions needed for valid breath-alcohol sample acceptance. Table 1 shows the effect that the duration of blowing has for a subject having achieved breath-alcohol concentrations in the range around 0.080 g/210 L. The subject alternately blew for shorter periods of time and then for longer periods of time every two to four minutes as reflected by the breath volumes reported by the Intoxilyzer 8000. During the time period from 10:53 p.m. to 11:22 p.m., test results alternated from below to above the *per se* limit of 0.080 g/210 L with variations in adjacent test results as large as 0.025 g/210 L (equal to 31.25% of 0.080 g/210 L). On August 20, 2007, County Judge Augustus D. Aikens, Jr. (Tallahassee, Leon County, Florida), ruled in the case of *State of Florida vs. James Briggs, et al.* that "Accordingly, this Court finds that such operator 'blow longer' instructions create a possible manipulation of the Intoxilyzer 8000 results that is not properly addressed by FDLE's rules" and granted the motion of the Defendants that the breath test results obtained will not be admissible in any subsequent trial without additional appropriate showings.

The breath acceptance criteria of the Intoxilyzer 8000 needs to be redesigned in order to achieve more uniform, reproducible, scientifically reliable test results.

7. As noted by the TBI Forensic Services Division, examination of the controller software is a critical part of a machine's evaluation for approval. Since CMI has refused to release their controller software for independent examination by either state experts or by defense experts, it is impossible to determine the scientific reliability of software procedures for detection of ethanol by the Intoxilyzer 8000.

Because of the multitude of problems as cited above, among the forensic toxicology community which has closely examined and studied the Intoxilyzer 8000, there is a general lack of acceptance of the Intoxilyzer 8000 as a scientifically reliable state-of-the-art evidential breath-alcohol testing machine. Several changes in the design and software programing of the Intoxilyzer 8000 will have to occur before this machine achieves general acceptance as having scientifically reliability by the forensic toxicology community.

Sincerely,

Alfred E. Staubus, Pharm.D., Ph.D.

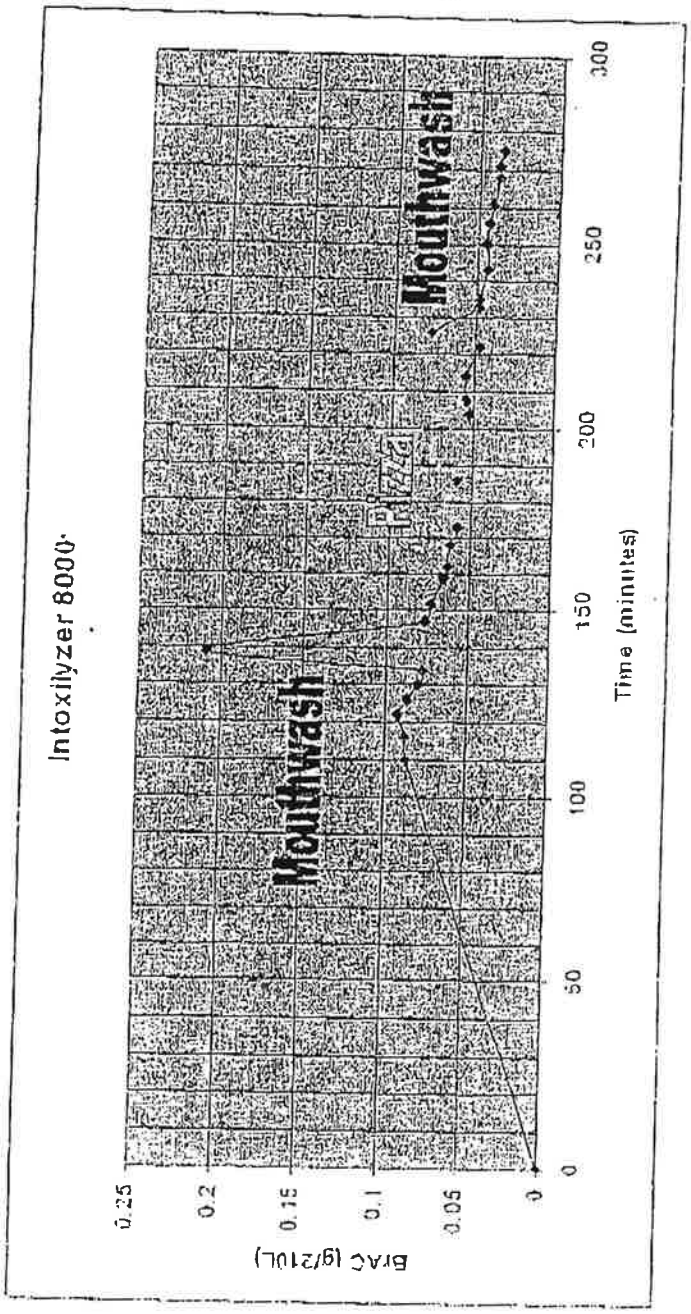
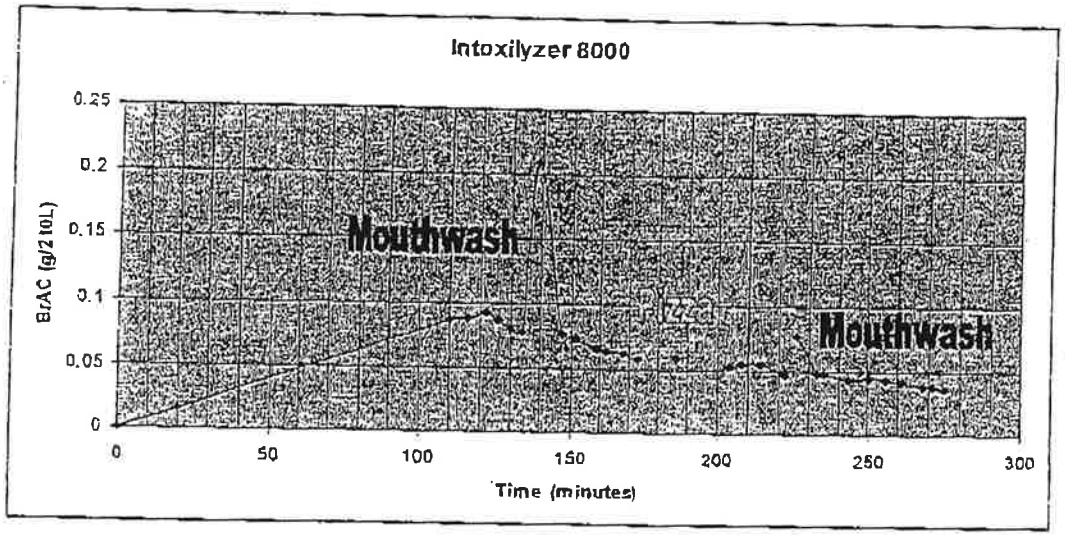

Intoxilyzer 8000
Mouthwash
Mouthwash
BrAC (g/210L)
0.25
0.2
0.15
0.1
0.05
0
0
50
100
150
200
250
300
Time (minutes)

Figure 1.


Intoxilyzer 8000
BrAC (g/210L)
0.25
0.2
0.15
0.1
0.05
0
Mouthwash
Mouthwash
0
50
100
150
200
250
300
Time (minutes)

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2007 APR -3 AM 9:14
STATE ATTORNEY

Intoxilyzer 8000

Demonstration of the Effects of Duration of Blowing

Alfred E. Staubus, Pharm.D., Ph.D

April 2, 2007

For purposes of demonstrating the effects of the duration of blowing on the resultant breath alcohol test results, a study was conducted on Saturday night, March 31, 2007 using the Intoxilyzer 8000 breath alcohol testing machine.

Testing Procedure:

A pre-drinking control test was conducted by Dr. Staubus showing (1) the machine was operating properly with a dry gas external calibration check reading of 0.077 g/210 L (target value of 0.080 g/210 L) and (2) the test subject (Dr. Staubus) had no alcohol in his system prior to the drinking: the blank breath test reading was 0.000 g/210 L at 9:32 p.m. (21:32).

Results:

The test subject then consumed ten (10) ounces of 80 proof brandy over the period of time from 9:34 p.m. to 9:45 p.m. After waiting over one hour for alcohol absorption and mouth alcohol dissipation to occur, twenty-two (22) breath alcohol tests were performed as summarized on Table 1. The resultant breath alcohol concentrations were clearly dependent upon the duration of blowing. Examination of the data show that by alternating the duration of blowing, breath samples taken within three minutes of each other show that the longer the duration of blowing, the greater will be the total breath volume and the higher will be the measured breath alcohol concentration.

Discussion:

The "true alcohol concentration" is based on the "2100-to-1" partition ratio, which, in turn, is based upon an "average" value of a group of studies having no uniform requirements for duration of the blowing times. Breath alcohol concentrations from those studies were obtained after the machines' minimum volume requirements were met with subjects having a full range of blowing times, some with short durations (just meeting the minimum volume requirement) and others with longer durations. Consequently, the "2100-to-1" partition ratio corresponds to some duration of blowing between the minimum volume requirement of the machines and the

maximum blowing capacities of the subjects.

Since during the blowing process, the blood alcohol concentration will not change, the apparent partition ratio will vary, during a subject's test, from the minimum volume requirement of the machine (at which the apparent partition ratio will be greater than 2100-to-1 resulting in a BrAC less than the BAC) through the ideal "2100-to-1" value (when the BrAC = BAC, in theory at least), and will pass into a region in which the partition ratio will be less than 2100-to-1 (when the BrAC > BAC) as the subject continues to blow in compliance with the officer's instructions to "keep blowing, keep blowing, ...".

As an example, assume a subject has a blood alcohol concentration of 0.075 g/dL and blows into a machine having a 1.1 L or a 1.5 L minimum volume requirement. Assuming the other breath sample acceptance criteria are met, the subject could have a valid sample if the blowing stops with a breath volume of 1.5 L at, for example, five seconds of blowing. At that time a valid sample of 0.068 g/210 L could be obtained (corresponding to a partition ratio of 2316-to-1). If, however, he had blown for a total of, for example, seven seconds, a valid sample of 0.075 g/210 L could be obtained (corresponding to a partition ratio of 2100-to-1). And if he had blown for a total of, for example, nine seconds, a valid sample of 0.083 g/210 L could be obtained (corresponding to a partition ratio of 1898:1). Three different breath test results, three different partition ratios, but all in the same subject with the same blood alcohol concentration–they can vary that much just depending upon the duration of blowing. See Figure 1.

In this example, the subject, when he fully complies with the officer's instructions to "keep blowing, keep blowing, ..." will produce a falsely high, not a true, breath alcohol concentration above the *per se* limit at the time when his blood alcohol concentration was below the *per se* limit.

Conclusion:

Allowing the testing officer to instruct the subject to maximize the duration of the breath sample beyond the acceptance criteria of the machine will most likely result in obtaining a breath alcohol concentration greater than the subject's corresponding blood alcohol concentration at the time of the test. Consequently, the prolongation of the blowing procedure beyond the acceptance criteria of the breath alcohol testing machine will most likely produce results that are falsely high and, therefore, prejudicial to the defendant.

04/01/2007 08:20 PM

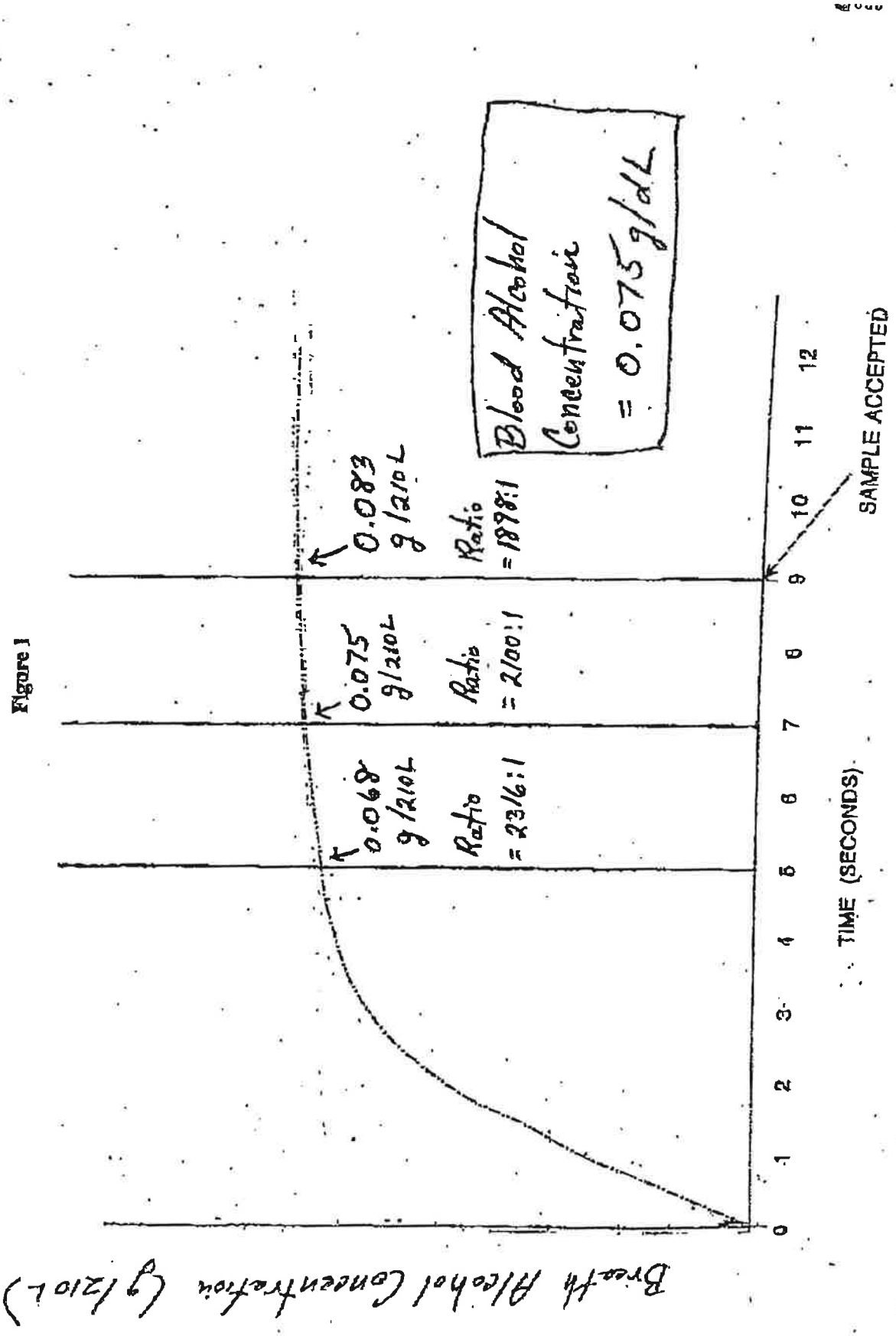

Figure 1

Table 1

Time	Breath Volume	Breath Alcohol Concentration	Comments
10:53 p.m.	1.335 Liters	0.079 g/210 L	Below *per se* limit
10:56 p.m.	**3.402 Liters**	**0.084 g/210 L**	**Above *per se* limit**
10:58 p.m.	1.375 Liters	0.060 g/210 L	Below *per se* limit
11:01 p.m.	**3.699 Liters**	**0.085 g/210 L**	**Above *per se* limit**
11:03 p.m.	1.625 Liters	0.060 g/210 L	Below *per se* limit
11:06 p.m.	**2.230 Liters**	**0.085 g/210 L**	**Above *per se* limit**
11:09 p.m.	1.847 Liters	0.066 g/210 L	Below *per se* limit
11:11 p.m.	**2.925 Liters**	**0.087 g/210 L**	**Above *per se* limit**
11:14 p.m.	1.980 Liters	0.070 g/210 L	Below *per se* limit
11:17 p.m.	**3.777 Liters**	**0.083 g/210 L**	**Above *per se* limit**
11:19 p.m.	2.332 Liters	0.064 g/210 L	Below *per se* limit
11:22 p.m.	**3.738 Liters**	**0.083 g/210 L**	**Above *per se* limit**
11:25 p.m.	2.796 Liters	0.067 g/210 L	Below *per se* limit
11:27 p.m.	1.292 Liters	0.061 g/210 L	Below *per se* limit
11:30 p.m.	3.449 Liters	0.070 g/210 L	Below *per se* limit
11:33 p.m.	1.808 Liters	0.069 g/210 L	Below *per se* limit
11:36 p.m.	4.039 Liters	0.076 g/210 L	Below *per se* limit
11:39 p.m.	1.566 Liters	0.057 g/210 L	Changed testing
11:40 p.m.	3.789 Liters	0.072 g/210 L	sequence to ABABA
11:44 p.m.	1.722 Liters	0.055 g/210 L	sequence = ABABA
11:46 p.m.	3.277 Liters	0.073 g/210 L	sequence = ABABA
11:49 p.m.	1.628 Liters	0.060 g/210 L	sequence = ACABA

04/01/2007 08:20 FAX

Blank = Pre-drinking control

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 21:31:[illegible] EST

Test	g/210L	Time
Air Blank	0.000	21:31:37 EST
Cal Check	0.077	21:31:56 EST
Air Blank	0.000	21:32:33 EST
Subject Test	0.000	21:32:56 EST
Breath Volume	1.437 LITERS	
Air Blank	0.000	21:33:34 EST

Operator's Signature

9:34 PM = to 80 proof Brandy.

9:45 pm started 1 oz

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 22:51:42 EST

Test	g/210L	Time
Air Blank	0.000	22:52:19 EST
Cal Check	0.076	22:52:28 EST
Air Blank	0.000	22:53:06 EST
Subject Test	0.079	22:53:31 EST
Breath Volume	1.335 LITERS	
Air Blank	0.000	22:54:08 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 22:54:11 EST

Test	g/210L	Time
Air Blank	0.000	22:54:39 EST
Cal Check	0.075	22:54:58 EST
Air Blank	0.000	22:55:35 EST
Subject Test	0.084	22:56:08 EST
Breath Volume	3.402 LITERS	
Air Blank	0.000	22:56:46 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 22:56:51 EST

Test	g/210L	Time
Air Blank	0.000	22:57:18 EST
Cal Check	0.076	22:57:37 EST
Air Blank	0.000	22:58:15 EST
Subject Test	0.080	22:58:44 EST
Breath Volume	1.375 LITERS	
Air Blank	0.000	22:59:22 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 22:59:27 EST

Test	g/210L	Time
Air Blank	0.000	22:59:54 EST
Cal Check	0.075	23:00:13 EST
Air Blank	0.000	23:00:50 EST
Subject Test	0.085	23:01:26 EST
Breath Volume	3.699 LITERS	
Air Blank	0.000	23:02:04 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:02:13 EST

Test	g/210L	Time
Air Blank	0.000	23:02:48 EST
Cal Check	0.075	23:02:59 EST
Air Blank	0.000	23:03:36 EST
Subject Test	0.080	23:03:56 EST
Breath Volume	1.625 LITERS	
Air Blank	0.000	23:04:34 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
[illegible] 23:40:57 EST

Page 1

04/01/2007 08:20 FAX

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:04:57 EST

Test	g/210L	Time
Air Blank	0.000	23:05:25 EST
Cal Check	0.075	23:05:44 EST
Air Blank	0.000	23:06:21 EST
Subject Test	0.085	23:06:42 EST
Breath Volume	2.230 LITERS	
Air Blank	0.000	23:07:19 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:10:15 EST

Test	g/210L	Time
Air Blank	0.000	23:10:43 EST
Cal Check	0.076	23:11:01 EST
Air Blank	0.000	23:11:39 EST
Subject Test	0.087	23:11:58 EST
Breath Volume	2.925 LITERS	
Air Blank	0.000	23:12:35 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:15:16 EST

Test	g/210L	Time
Air Blank	0.000	23:15:43 EST
Cal Check	0.076	23:16:02 EST
Air Blank	0.000	23:16:39 EST
Subject Test	0.083	23:17:05 EST
Breath Volume	3.777 LITERS	
Air Blank	0.000	23:17:42 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:07:37 EST

Test	g/210L	Time
Air Blank	0.000	23:08:05 EST
Cal Check	0.076	23:08:23 EST
Air Blank	0.000	23:09:01 EST
Subject Test	0.066	23:09:24 EST
Breath Volume	1.847 LITERS	
Air Blank	0.000	23:10:01 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:12:41 EST

Test	g/210L	Time
Air Blank	0.000	23:13:09 EST
Cal Check	0.076	23:13:28 EST
Air Blank	0.000	23:14:05 EST
Subject Test	0.070	23:14:29 EST
Breath Volume	1.980 LITERS	
Air Blank	0.000	23:15:06 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:17:47 EST

Test	g/210L	Time
Air Blank	0.000	23:18:15 EST
Cal Check	0.076	23:18:34 EST
Air Blank	0.000	23:19:11 EST
Subject Test	0.064	23:19:36 EST
Breath Volume	2.332 LITERS	
Air Blank	0.000	23:20:13 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:18:15 EST

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]

04/01/2007 08:20 FAX

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:20:47 EST

Test	g/210L	Time
Air Blank	0.000	23:21:14 EST
Cal Check	0.077	23:21:33 EST
Air Blank	0.000	23:22:18 EST
Subject Test	0.083	23:22:36 EST
Breath Volume	3.738 LITERS	
Air Blank	0.000	23:23:13 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:26:14 EST

Test	g/210L	Time
Air Blank	0.000	23:26:42 EST
Cal Check	0.076	23:27:01 EST
Air Blank	0.000	23:27:38 EST
Subject Test	0.061	23:27:57 EST
Breath Volume	1.282 LITERS	
Air Blank	0.000	23:28:34 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:31:47 EST

Test	g/210L	Time
Air Blank	0.000	23:32:14 EST
Cal Check	0.077	23:32:33 EST
Air Blank	0.000	23:33:18 EST
Subject Test	0.069	23:33:33 EST
Breath Volume	1.808 LITERS	
Air Blank	0.000	23:34:10 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:23:36 EST

Test	g/210L	Time
Air Blank	0.000	23:24:03 EST
Cal Check	0.076	23:24:22 EST
Air Blank	0.000	23:24:55 EST
Subject Test	0.067	23:25:25 EST
Breath Volume	2.796 LITERS	
Air Blank	0.000	23:26:02 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:28:46 EST

Test	g/210L	Time
Air Blank	0.000	23:29:13 EST
Cal Check	0.077	23:29:31 EST
Air Blank	0.000	23:30:09 EST
Subject Test	0.078	23:30:45 EST
Breath Volume	3.449 LITERS	
Air Blank	0.000	23:31:22 EST

Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN [redacted]
03/31/2007 23:34:22 EST

Test	g/210L	Time
Air Blank	0.000	23:34:58 EST
Cal Check	0.077	23:35:19 EST
Air Blank	0.000	23:35:46 EST
Subject Test	0.076	23:36:10 EST
Breath Volume	4.039 LITERS	
Air Blank	0.000	23:36:55 EST

Operator's Signature

Thanks for the Discovery

From ACABA to ABABA Page 3

COLUMBUS, OHIO

Changed test sequence from ACABA to ABABA

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:38:23 EST

Test	g/210L	Time
Air Blank	0.000	23:38:50 EST
Subject Test	0.057	23:39:33 EST
Breath Volume	1.565 LITERS	
Air Blank	0.000	23:40:11 EST
Subject Test	0.072	23:40:42 EST
Breath Volume	3.788 LITERS	
Air Blank	ABT*	23:41:18 EST
Air Blank	0.000	23:41:45 EST

*Sequence Aborted

Blocked Start button

AES
Operator's Signature

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:41:57 EST

Test	g/210L	Time
Air Blank	0.000	23:42:24 EST
Subject Test	ABT*	23:42:45 EST
Breath Volume	0.000 LITERS	
Air Blank	0.000	23:43:23 EST

*Sequence Aborted

Blocked Start button

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:43:37 EST

Test	g/210L	Time
Air Blank	0.000	23:44:05 EST
Subject Test	0.055	23:44:58 EST
Breath Volume	1.722 LITERS	
Air Blank	0.000	23:45:35 EST
Subject Test	0.073	23:46:05 EST
Breath Volume	3.277 LITERS	
Air Blank	0.000	23:46:42 EST

AES
Operator's Signature

Changed back to ACABA

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:47:53 EST

Test	g/210L	Time
Air Blank	0.000	23:48:20 EST
Cal Check	0.077	23:48:39 EST
Air Blank	0.000	23:49:16 EST
Subject Test	0.068	23:49:36 EST
Breath Volume	1.628 LITERS	
Air Blank	0.000	23:50:14 EST

Changed back to ACABA

COLUMBUS, OHIO
Intoxilyzer - Alcohol Analyzer
Model 8000 SN 80[redacted]
03/31/2007 23:47:53 EST

Test	g/210L	Time
Air Blank	0.000	23:48:20 EST
Cal Check	0.077	23:48:39 EST
Air Blank	0.000	23:49:16 EST
Subject Test	0.068	23:49:36 EST
Breath Volume	1.628 LITERS	
Air Blank	0.000	23:50:14 EST

AES
Operator's Signature

Alfred E. Staubach
Ht = 6'3"
Wt = 272 lbs